About the Authors

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Scott Beardsley is a Director in McKinsey & Company's Brussels Office and a member of McKinsey's global Board of Directors (Shareholders Council). Since joining the firm in 1989, he has been particularly active in helping clients around the world on a range of strategy, regulation, stakeholder management, business in society, and performance transformation topics in the telecommunications, technology, and media sectors. He is a global leader of McKinsey's telecommunication practice, and has been the leader of McKinsey's Strategy practice in Europe, the Middle East, and Africa for the past several years. He has co-chaired the personnel committees that elect and evaluate McKinsey partners as well as the committee that elects Directors (Senior Partners). Currently he leads all the leadership development, training, and learning programs for McKinsey's consultants globally. For the past few years, he has been leading a variety of internal research initiatives. A frequent author and public speaker, he has spoken in a variety of venues and authored editorials in the *Wall Street Journal* and the *Financial Times* as well as numerous articles in the *McKinsey Quarterly* and related publications on a variety of telecommunications, broadband, interactions, and strategy topics. He has appeared in television broadcasts on the subject of broadband, telecommunication competition, and deregulation, and has co-authored part of seven books related to regulatory strategy, ICTs, and networked readiness. He has also delivered presentations for the World Economic Forum at Davos on digital readiness and telecommunication sector reform, as well as the future of telecommunication regulation. Prior to joining McKinsey, Mr Beardsley was employed as Editor and Marketing Manager at the MIT *Sloan Management Review.* Additionally, he worked in the strategic sales and product marketing functions for Advanced Micro Devices and Analog Devices of the semiconductor industry. Mr Beardsley is Chairman of the Board of Directors of the American Chamber of Commerce in Belgium and on the Board of Directors of St John's International School in Waterloo, Belgium. He was a Henry S. Dupont III Scholar (highest honors) for outstanding academic performance at the MIT Sloan School of Management, where he graduated with an MBA in Corporate Strategy and Marketing. He holds a Bachelor of Science in Electrical Engineering *magna cum laude* from Tufts University, where he achieved highest honors.

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Luis Enriquez

Luis Enriquez is a Director in McKinsey & Company's Brussels Office, where he has worked primarily in the infrastructure and regulated industries, focusing on regulation, operations and pricing in telecommunications (fixed and mobile businesses), and energy. He co-leads McKinsey's global efforts in regulation, regulatory economics, and stakeholder management and has worked extensively in this area both at McKinsey and prior to joining the firm. In addition, Mr Enriquez has led the firm's functional knowledge initiatives in emerging regulatory areas, including regulatory management best practices, organizational models, and key tools and capabilities to support regulatory strategy. He co-leads the global infrastructure initiative in telecommunications and McKinsey's regulatory strategy function. He has worked extensively on regulatory and stakeholder management topics in regulated and unregulated industries in approximately 60 countries, including security of supply, understanding the challenges of the US energy liberalization model, the unbundling of network functions, the emergence of Voice over IP and Internet access models, trends in the regulation of fixed telephony, and emerging issues surrounding the regulation of mobile networks and regulatory strategy in an unregulated context. He is currently leading a cross-industry internal task force to gather global lessons in regulatory management and strategy across industries. He has collaborated with ITU, the World Economic Forum (where he has co-authored a contribution to the *Global Information Technology Report* since the report's inception), government panels, and regulatory agencies on multiple issues, and has published perspectives on major topics such as regulatory strategy, market dominance remedies, regulation of infrastructure in major newspapers and other publications. Prior to joining McKinsey, Mr Enriquez worked extensively in liberalization, company restructuring, and regulation issues in Europe, the United States, and Latin America. He assisted the Ministry of Finance of the Czech Republic in developing price regulations to support the privatization of Czech Telecom (then SPT Telecom) in 1994, and taught courses and seminars on issues surrounding liberalization, competition, and interconnection. He worked in the Office of Plans and Policy with the Chief Economist of the Federal Communications Commission during the implementation of the 1996 Telecommunications Act, and has worked with US telecommunications and energy firms on multiple regulatory topics ranging from incremental cost pricing, rate base regulation, and wholesale pricing models to price cap regulation, interconnection, unbundling and collocation, and pricing of broadband services. Mr Enriquez has an AB in Economics from Harvard University and did his doctoral work in Economics at the University of California at Berkeley, where he focused on the economic dynamics of interconnection among telecommunications networks.

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Thierry Geiger is an Economist and Associate Director with the Global Competitiveness and Benchmarking Network at the World Economic Forum. He leads the competitiveness research on Asia, supervises the development and computation of a wide range of composite indicators, and is responsible for the Network's technical assistance and capacity-building activities. His areas of expertise are private-sector development, international trade, and applied economics. Mr Geiger is a co-author of the Forum's flagship publications *The Global Competitiveness Report, The Global Information Technology Report,* and *The Global Enabling Trade Report.* He is the lead author of several regional and country studies. A Swiss national, Mr Geiger holds a BA in Economics from the University of Geneva, an MA in Economics from the University of British Columbia, and was a Fellow of the Forum's Global Leadership Programme. Prior to joining the Forum, he worked for the World Trade Organization and Caterpillar Inc. He is Co-Founder of Procab Studio, a Geneva-based IT company.

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Mikael Hagström

Mikael Hagström is the Executive Vice President at SAS and leads SAS' Europe, Middle East, Africa, and Asia Pacific regions, which represent 54 percent of its 2011 revenue, or 1.47 billion US dollars. Overseeing 4,500 professionals in 48 countries, Mr Hagström is responsible for delivering revenue growth and profit, and for harnessing the potential in the current market. He is Chair of the American Chamber of Commerce to the European Union Executive Council and is active in the US Council for International Business and the Atlantic Council.

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Bruno Lanvin

Bruno Lanvin is the Executive Director of INSEAD IECI and a former Senior Executive at the World Bank and the United Nations. His work focuses on competitiveness, innovation, skills, government reform, and social media. From 2007 to 2013, he was the Executive Director of eLab at INSEAD. Dr Lanvin has been a Commissioner on the Broadband Commission since its creation in 2010 (www.broadbandcommission.org), and, in 2011, he was appointed to the Board of Directors of IDA Infocomm in Singapore (www.ida.gov.sg). He currently serves as a member of the Media Convergence Panel of Singapore's Media Development Authority (MDA) (www.mda.gov.sg). Since 2009, he has been Chair and then a member of the Global Advisory Council on the Future of Government (World Economic Forum), focusing on the influence of social media on governance and democracy (www. weforum.org/pdf/GAC09/council/future_of_government/ proposal.htm). From 2000 to 2007, Dr Lanvin held various senior positions at the World Bank, including Manager of the Information for Development Program (www.infodev. org), Focal Point for the World Summit on Information Society (WSIS), Regional Coordinator for Europe for ICT and e-strategies, and President of the Bank's e-Thematic Group. From 2000 to 2001, Dr Lanvin also served as Executive Secretary of the G-8 Digital Opportunity Task (DOT) Force. From 1979 to 2000, he held various high-level positions in the United Nations, including Chief of Cabinet of the Director General of the United Nations in New York, Head of Strategic Planning and later Chief of the SME Trade Competitiveness Unit of UNCTAD/SITE in Geneva, and Deputy Executive Secretary of UNISTE. Dr Lanvin has degrees in Mathematics and Physics (a License from the University of Valenciennes, France), Business (an MBA from HEC, France) and Economics (a PhD from the University of Paris I – Pantheon-Sorbonne, France). He speaks French, English, and Spanish, and has a working knowledge of Portuguese, Italian, and Russian, as well as some knowledge of Mandarin. A frequent speaker at high-level international conferences, he is the author of a wide range of books, articles, and studies on information societies, international trade, development, and innovation in the public sector.

Youlia Lozanova

Youlia Lozanova currently works as a Telecommunication/ ICT Regulatory Analyst with the Development sector of International Telecommunication Union (ITU), where she has worked since 2005. Her main areas of work are regulatory reform and policy development in the ICT sector. Before joining ITU, she spent three years as a Researcher in the Sofia University and two years with the public media in Bulgaria. Over the last seven years, she has specialized in the areas of ICT development, policy, and regulation and has co-authored material for several reports, including the *World Information Society Report* 2006 and 2007, *Trends in Telecommunication Reform* 2008, 2009, 2010–11 and 2012, and the *ITU Broadband Atlas.* Ms Lozanova holds a Political Science Honours Degree from Sofia University (Bulgaria) and a Master in Public Policy Management and a Master in Development Studies from the University of Geneva (Switzerland).

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Julia Adler-Milstein

Julia Adler-Milstein, PhD, is an Assistant Professor at the School of Information at the University of Michigan with a joint appointment to the School of Public Health (Health Management and Policy). Her research focuses on policy and management issues related to the use of IT in healthcare delivery. Her expertise is in health information exchange and the productivity and efficiency of electronic health records. Dr Adler-Milstein graduated with a Doctorate in Health Policy from Harvard University.

Diego Molano Vega

The Minister of Information and Communication Technologies of Colombia, Mr Diego Molano Vega is an electrical engineer, born in a small city in the mountains called Tunja, Boyacá. He has a Master in Economics from the Universidad Javeriana in Bogotá, Colombia, and an MBA from the Institute for Management Development (IMD) in Lausanne, Switzerland. He has over 20 years of experience in the ICT industry, in both the public and private arenas. In 1996, he assumed his first public servant role: member of the Telecommunications Regulatory Commission of Colombia, an entity over which he presided for two years, where he was responsible for the liberalization of the telecommunication sector in the country, encouraging private foreign investment and rendering the industry much more competitive. He has also held executive positions in multinational companies such as Ascom (Switzerland), Bellsouth (the United States), and Telefónica (Spain), where he acted as Deputy General Director and looked after Corporate Affairs for 18 countries in Latin America. In 2010, he was appointed Minister of ICT of Colombia by President Juan Manuel Santos and created the Plan Vive Digital—the national ICT plan that aims to reduce poverty, create jobs, and increase competitiveness through the widespread use of the Internet. In 2012, he was named the best Minister of Telecommunications in the world, obtaining for Colombia the GSMA Government Leadership Award for being the country with the best public policies in technology around the globe. Throughout his career, Mr Molano Vega directed research and publications on the impact of technology on public health, banking, the justice sector, education, small- and medium-sized companies, productivity, competitiveness, and innovation in Latin America. He has served on the boards of important major international business organizations such as the Iberoamerican Association of Telecommunications Operators (Ahciet), the Business Economic Forum of Mercosur (MEBF), the European Business Forum, EUBrasil, and the Chamber of Commerce of Colombia in Spain. He was also the founder and president of the Telecommunications Regulators Association of Latin America (Regulatel) and member of the board of 4-72, the postal network in Colombia that operates the National Postal Services SA.

Stagg Newman

Stagg Newman provides technology, regulatory, and strategic advice and analysis to McKinsey clients globally as a McKinsey Advisor, a position he has held since 2005 except for a nine-month assignment with the US Federal Communications Commission (FCC). Dr Newman recently served as Chief Technologist on the US FCC National Broadband Team that developed *Connecting America: The National Broadband Plan,* a report to Congress and the President on the US broadband state of deployment and future plans. He also served as an adviser to the Obama Transition Team on telecommunications policy. He continues to do pro bono work for US government entities and was also the lead contributor to the infrastructure and deployment sections of the UN Broadband Commission report *Broadband: A Platform for Progress.* From 2000 to 2005, Dr Newman served McKinsey & Company as Senior Telecom Expert, working with hundreds of client teams worldwide. He provided technical leadership for the firm's knowledge development efforts, particularly in broadband access, high-speed wireless, and the intersection of technology and regulation. He represented McKinsey on the Technology Advisory Council of the US FCC, where he led the Broadband Working Group that assessed broadband access platforms and presented *The State of Fixed and Mobile Broadband Wireless Technology: The Next Half Decade,* which analyzed 3G, WiFi Mesh, and WiMax technologies. In 2007, he was CTO of Frontline Wireless, a startup designed to win US 700 MHz spectrum and build out a 4G network to serve public safety and commercial interests. Dr Newman was Chief Technologist at the FCC in 1998 and 1999, where he advised the Commissioners and senior staffers on strategic technology issues. He championed the "unregulation" of the Internet, an Internet-friendly spectrum policy, and policies that encouraged technology innovation and investment. Dr Newman started his telecommunications career with Bell Labs in 1976 and worked for various descendants of AT&T in voice, data, and video communications. From 1994 to 1997 he was Vice President, Network Technology and Architecture, Applied Research at Bellcore, where he led the wireless, optical networking, and network access technology and architecture research. Prior to that, he led the network technology organization responsible for technical specifications, certification, and conformance testing. Dr Newman received his BS from Davidson College and his MS and PhD from Cornell in Math.

Didier Nkurikiyimfura

Didier Nkurikiyimfura joined the ICT sector 10 years ago after receiving a technical and engineering education. At his current capacity of Director General in charge of ICT in the Ministry of Youth and ICT, he is in charge of the country's ICT Policy and Strategy development and coordination. Prior to his current functions, Mr Nkurikiyimfura worked at the Rwanda Development Board (RDB) where he served in the capacity of Head of the IT Security Division, which plans, implements, and coordinates Rwanda's ICT security. Didier also worked at the Rwanda Information Technology Authority, where he served as Director of the National Computing Center (NCC) and then Director of the National Data Center (NDC). A national of Rwanda, Mr Nkurikiyimfura holds a Bachelor of Science in Computer Science and a Master of Science in Software Engineering.

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Robert Pepper

Robert Pepper is Vice President, Global Technology Policy, at Cisco. He leads a team working with governments across the world in areas such as broadband, IP-enabled services, wireless and spectrum policy, security, privacy, Internet governance, and ICT development. He joined Cisco in July 2005 from the FCC, where he served as Chief of the Office of Plans and Policy and Chief of Policy Development beginning in 1989, leading teams developing policies promoting the development of the Internet, implementing telecommunications legislation, planning for the transition to digital television, and designing and implementing the first US spectrum auctions. Before joining the FCC, he was Director of the Annenberg Washington Program in Communications Policy. His government service also included Acting Associate Administrator at the National Telecommunications and Information Administration (NTIA) and initiating a program on Computers, Communications and Information Policy at the National Science Foundation. His academic appointments include faculty positions at the Universities of Iowa, Indiana, and Pennsylvania, and he has been a Research Affiliate at Harvard University. He serves on the board of the US Telecommunications Training Institute (USTTI) and advisory boards for Columbia University and Michigan State University, and is a Communications Program Fellow at the Aspen Institute. He is a member of the US Department of Commerce's Spectrum Management Advisory Committee, the UK's Ofcom Spectrum Advisory Board, and the US Department of State's Advisory Committee on International Communications and Information Policy. Dr Pepper received his BA and PhD from the University of Wisconsin-Madison.

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Anna Magdalena Polomska has worked in the private sector consulting on telecommunication projects. She is Project Officer in the Broadband Commission for Digital Development Secretariat, where she conducts research on the latest trends of ICTs, broadband policies, and regulation and has contributed to several studies and reports, including *Broadband: A Platform for Progress 2011* and *The State of Broadband 2012.* Ms. Polomska graduated in 2007 from the Warsaw School of Economics in Poland, with a Master in Finance, where she majored in Banking. She had a one-year scholarship in International Business at l'ESCE in Paris. She is now studying for a Master in Law from UMCS University in Poland.

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Malin Strandell-Jansson

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Nancy Sundberg is a Senior Programme Officer at the International Telecommunication Union (ITU). She has been involved in telecommunications/ICT reform for more than 15 years. At ITU, she coordinates and contributes to regulatory publications such as *Trends in Telecommunications Reform.* She is a co-organizer of the BDT's annual Global Symposium for Regulators (GSR) and is also actively involved in the organization of regional events and the Training Programme for Regulators and Policy-Makers. She is coordinating further developments of the ITU infoDev online ICT regulation toolkit. She is also managing methods of information gathering and sharing for the annual regulatory survey, the regulatory database on the ITU's ICT Eye portal, and the Broadband Universe portal. She regularly delivers reports, articles, and presentations on sector reform at regulatory meetings around the world.

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Wim Torfs is a Principal with McKinsey & Company. He joined the Brussels Office in mid-2003 and transferred to the Dubai Office at the beginning of 2007. His main focus is on pricing and regulation. Besides his career with McKinsey & Company, Mr Torfs has been a Consultant with Bureau van Dijk Management Consultants in Brussels, where he was an expert in market liberalization issues. Mr Torfs holds a degree in Commercial Engineering from the University of Antwerp (Belgium) and a Master of Business Administration from the Vlerick Leuven Ghent Management School (Belgium).

David Vincent

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Sean Williams

Mr Williams is Group Director of Strategy, Policy & Portfolio for BT Group, which he joined in September 2008. Before joining BT, he was Executive Director on the Board of the Office of Fair Trading from 2007 to 2008, responsible for competition law and consumer law enforcement in the United Kingdom, including merger control and anti-cartel investigations. Previously he was Executive Director on the Board of Ofcom from 2003 to 2007, responsible for economic regulation and competition policy in telecommunications and broadcasting in the United Kingdom. He led Ofcom's work on broadband and LLU, the Telecoms Strategic Review, and the new regulatory settlement under BT's Undertakings. Before working for Ofcom, Mr Williams was a Partner of LEK Consulting LLP from 1997 to 2003, an international strategy consulting firm originating in the United Kingdom. From 1995 to 1997, he was a Policy Advisor in the Prime Minister's Policy Unit at 10 Downing Street. From 1990 to 2008 he was a Board Director of Williams Lea Group, a private business services company employing about 10,000 people worldwide. He has degrees in Economics from Oxford and Harvard Universities.

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